



February 9, 2017

The Dow Chemical Company

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US EPA, Region IX  
75 Hawthorne Street  
San Francisco, CA 94105

Priority Overnight Mail

**Response to  
Notice of Violation  
Dow Chemical Company, EPA ID number CAD076528678**

Dear Mr. McDaniel:

Thank you for your letter of January 6, 2017 and the attached CD, received January 12, 2017 – which constitute a Notice Of Violation (NOV), its details and a related Compliance Evaluation Inspection (CEI) report. Since receiving this material, we have conducted an in depth review and have this response, which is within the thirty (30) calendar days identified in your NOV.

We understand and appreciate the limitations of the NOV identified in your letter and the scope and implications of the citations in your NOV, including those related to Confidential Business Information (CBI). CBI is clearly marked in this response and an attached response with the CBI redacted, to facilitate your managing this NOV.

Summary. This letter contains Dow's response to concerns identified in the NOV as 1-13 and A-D, which are complete. We are progressing on our response to concerns identified in the NOV as E and expect to have this resolved by 2/17/2017.

First, we address the factual accuracy of the report, which is the result of what your staff had to immediately grasp from the inspection on April 4-8, 2016, the preparation for that inspection and subsequent answers to questions. The attached, marked substantive corrections are made to the process description in this NOV

Second, we respond globally to your citation to federal regulation cited in the Code of Federal Register. 42 USC §6926(b) provides in part, referring a state authorized by EPA "to administer and enforce a hazardous waste program" "is authorized to carry out such program in lieu of the Federal program." While 40 CFR §272.250-299, entitled Subpart F- California are "Reserved," 76 FR 62303, 10/7/2011 contains a final rule

where EPA relates a history that starts with “California initially received final authorization on July 23, 1992.” The review of the revisions under consideration was addressed in that FR article by EPA saying, “[W]ith respect to these revisions, EPA is granting final authorization to the State to operate its program.” This authorization has the standard HSWA limitation. That same FR article limits EPA by saying, “State requirements that go beyond the scope of the Federal program are not part of the authorized program and EPA cannot enforce them.”

Unless this letter resolves these matters, since EPA has not codified its authorization of California’s waste program, leaving the designated section “Reserved” in the CFR, since EPA appears not to be enforcing California regulations in lieu of the Federal program, since EPA has cited Federal regulations that cover the same areas as are covered by the California regulation, Dow requests that EPA provide a list of the Federal regulations that have not been replaced by California regulations and are applicable in California, along with the FR citation where the California delegation exempted the Federal regulation from replacement

Third, we respond generally to what was identified in the NOV as Areas of Noncompliance 1-4, which deal with water streams:

We agree with the stream measurements contained in your NOV. There are 13 identified tanks which have streams which had pH outside the range of 2-12.5 standard units. Ten of these tanks had relative few (>20 per tank) instances identified, while three tanks had the majority of instances identified in the NOV.

Examining the water areas of concern, we believe that the proper designation of the Dow integrated production facility at Pittsburg includes that part of the integrated production facility that produces high quality water. This reduces the water footprint of the site, which was most significant during the recent drought. However the process that develops this high quality water was characterized before, it is really part of the Dow production process and the high quality water is a Dow product.

Historically, when industrial waste water treatment was required to add protection to the receiving waters, it was clear that the additional equipment served only waste treatment activities. However, as a continued push to reduce waste impacts and make better use of the materials consumed, the production process was extended to include using water that previously had been disposed, later treated then disposed. Dow is moving towards a no water discharge facility.

This high purity water production process consists of the chlorinolysis, process water treatment and brine/ condensate facilities. The Dow production facility is represented in the following Figure.



**Table 3 - High Purity Water Specifications**

High Purity Water Specification	
pH	7 – 9
Conductivity	< 75 micromhos
Iron	< 1 ppm
Total Hardness	< 0.4 ppm
TOC	< 10 ppm
Amines – Nalco 356	< 10 ppm

In addition about [REDACTED] of high purity water is returned to LMEC as condensate return, which is used by LMEC to produce steam. There is a contractual requirement to return of [REDACTED]. [REDACTED]

**CBI - Ex. 4**

**This returned, high purity water has to meet the specifications contained in**

Table 3. If the product use of high purity water were to decrease, LMEC would be very willing to take more of the high purity water. The brine/ condensate plant is operating at much less than half of its capacity, so no capital changes would be required to sell any additional high purity water to the pipeline customer. This demonstrates that there is a present market for this product. Further, condensate makeup is a product in a large number of industrial sites across the California and the United States.

One million two hundred thousand gallons of concentrated brine per year is disposed through the permitted outfall at Delta Diablo Sanitary District (DDSD), about [REDACTED]

[REDACTED] Of the [REDACTED] waters collected at the site, approximately 1 million gallons [REDACTED] was rejected in 2016 for failing to meet the intake specification. This rejected waters were disposed of offsite.

**CBI - Ex. 4**

This high purity water meets requirements that drinking water would not meet. For example, all organics are stripped and burned. Further, comparison of the EPA drinking water requirements, high purity water specifications, and Contra Costa Water District (CCWD) drinking water specifications are in Table 4.

**Table 4 - Comparison of Water Specifications**

	EPA Specification	Dow High Purity Water	CCWD 2015 Range	CCDW 2015 Average
pH	6.5-8.5	7-9	8.1-8.4	8.3
Conductivity (micromhos)	NA	<75	600-700	660
Iron (mg/L)	0.3	<1	NA	NA
Total Hardness (ppm)	< 500	< 0.4	120-140	130
TOC	NA	<10 ppm	NA	NA

From a legal perspective the feed streams, when used to produce high purity water, are intermediate manufacturing process streams.

See 20 California Safety and Health Code, where section 25116.5 defines “intermediate manufacturing process stream” as follows:

(a) “Intermediate manufacturing process stream” means a material, or combination of materials, that meets all of the following conditions:

- (1) It is produced as part of the manufacturing process.
- (2) It is used onsite on a batch or continuous basis, in either the same or in a different manufacturing process to produce a commercial product.
- (3) It is not a recyclable material.
- (4) The person who produced the material or combination of materials is able to demonstrate all of the following:
  - (A) The material, or combination of materials, is used, alone or in combination with other materials, in a manufacturing process that is designed for its use.
  - (B) The material, or combination of materials, is not accumulated or stored in amounts greater than can be used in the manufacturing process.
  - (C) The material, or combination of materials, is not handled, stored, or processed in a manner that is inconsistent with its intended use or the operating requirements of the manufacturing process.
  - (D) The material, or combination of materials, is not burned or incinerated for the purpose of abandoning or relinquishing the material or combination of materials, except as may otherwise be allowed under both this chapter and the federal act.

(b) Notwithstanding subdivision (a), a material is not an intermediate manufacturing process stream if it has been released in violation of this chapter, or any other applicable law, or an order issued pursuant to this chapter or other applicable law, unless it has been released into an

appropriate containment area or structure and has been promptly recovered and returned to the manufacturing process, without prior treatment, for use in the originally intended manufacturing process.

*(Amended by Stats. 2001, Ch. 605, Sec. 2. Effective October 9, 2001. Operative January 1, 2002, by Sec. 18 of Ch. 605.)*

Examining the definition, the high purity water feed streams all are produced as part of the manufacturing process; are used onsite in a continuous bases to produce a commercial product – both condensate return and Dow products; is not a recyclable material, addressed in detail later in this section; are used in a manufacturing process designed for its use; the material is not accumulated in greater amounts than can be used in the manufacturing process; the feed streams are not used in a manner inconsistent with the intended use or the requirements of the manufacturing process; the feed streams are not burned and the normal use of the streams will not be released in violation of any law – spills will be dealt with appropriately.

Focusing on recyclable material, we turn to its definition in 20 California Safety and Health Code, section 25121, which says:

- (a) “Recycled material” means a recyclable material which has been used or reused, or reclaimed.
- (b) “Recycled material” does not include an intermediate manufacturing process stream.

*(Amended by Stats. 1996, Ch. 579, Sec. 2. Effective January 1, 1997.)*

Recycled material excludes intermediate manufacturing process streams, so the high purity water feed streams are not recycled materials.

The statutory definition of waste is contained in in 20 California Safety and Health Code, section 25124, which states:

- (a) Except as provided in subdivision (c), “waste” means any solid, liquid, semisolid, or contained gaseous discarded material that is not excluded by this chapter or by regulations adopted pursuant to this chapter.
- (b) For purposes of subdivision (a), a discarded material is any material that is any of the following:
  - (1) Relinquished by being any of the following:
    - (A) Disposed of.
    - (B) Burned or incinerated.
    - (C) Accumulated, stored, or treated, but not recycled, before, or in lieu of, being relinquished by being disposed of, burned, or incinerated.
  - (2) Recycled, or accumulated, stored, or treated before recycling, except as provided in Section 25143.2.

- (3) Poses a threat to public health or the environment and meets either, or both, of the following conditions:
  - (A) It is mislabeled or not adequately labeled, unless the material is correctly labeled or adequately labeled within 10 days after the material is discovered to be mislabeled or inadequately labeled.
  - (B) It is packaged in deteriorated or damaged containers, unless the material is contained in sound or undamaged containers within 96 hours after the containers are discovered to be deteriorated or damaged.
- (4) Considered inherently wastelike, as specified in regulations adopted by the department.
- (c) Notwithstanding subdivision (a), a material is not a discarded material if it is either of the following:
  - (1) An intermediate manufacturing process stream.
  - (2)
    - (A) Except as specified in subparagraph (B) and to the extent consistent with the federal act, a coolant, lubricant, or cutting fluid necessary to the operation of manufacturing equipment, that is processed to extend the life of the material for continued use, and is processed in the same manufacturing equipment in which the material is used or in connected equipment that returns the material to the originating manufacturing equipment for continued use.
    - (B) Subparagraph (A) does not apply to any of the following material:
      - (i) Material that is processed in connected equipment that is not directly and permanently connected to the originating manufacturing equipment or that is constructed or operated in a manner that may allow the release of any material or constituent of the material into the environment.
      - (ii) Material that is a hazardous waste prior to being introduced into the manufacturing equipment or connected equipment.
      - (iii) Material that is removed from the manufacturing equipment or connected equipment for storage, treatment, disposal, or burning for energy recovery outside that equipment.
  - (iv) Material that remains in the manufacturing equipment or connected equipment more than 90 days after that equipment ceases to be operated.
  - (v) Material that is processed using methods other than physical procedures.

*(Amended by Stats. 1997, Ch. 470, Sec. 1. Effective January 1, 1998.)*

The definition of waste is conditioned by a reference that includes intermediate manufacturing process streams. Since the high purity water feed streams are not wastes, the hazardous waste regulations do not regulate the streams.

Fourth, we respond to each of the numbered Areas of Violation, numbered 1-4:

1. A water concern. Dow admits that the high purity feed streams are as physically characterized in the NOV. However, since the streams identified in this first area of violation are intermediate manufacturing process streams, they are not wastes and the cited regulations do not apply. Dow agrees that tank 1014 cleaning wastes off-site is a waste and if characteristically corrosive, would be a hazardous

waste and will be managed as a hazardous waste.

2. A water concern. Dow admits that the high purity feed streams are as physically characterized in the NOV. However, since the streams identified in this second area of violation are intermediate manufacturing process streams, they are not wastes and the cited regulations do not apply. Dow agrees that tank 1014 cleaning wastes and the identified inactive waste profiles off-site are wastes and if characteristically corrosive, would be hazardous wastes and will be managed as hazardous wastes.
3. A water concern. Dow agrees that it made its hazardous waste determinations for TC limits on the feed streams based on process knowledge when a part of the streams were removed from the process, for example, when there was a minor leak. Dow further agrees that the descriptions of the various high purity feed streams contained in the NOV are accurate. However, as the streams identified in the third area of violation are not wastes, no such determination is required.
4. A water concern. Dow agrees that the results of the sampling are as contained in the fourth area of violation are accurately depicted and is not challenging that it represents this stream. However, as the stream identified in this fourth area of violation is not a waste, the cited regulations do not apply.

Fifth, we respond generally to what was identified in the NOV as Areas of Noncompliance 5-13, which deal with the operation of the ST-HAF. The position (closed or open) of the Automatic Waste Feed Cut Off (AWFCO) positive shut off block valve is indicated by DI-107. A DI-107 value of 1 (one) shows that the block valve is closed, and a value of 0 (zero) shows the valve is open. The position of the block valve determines if there is hazardous waste feed to the combustion chamber or not. The value of DI-107 (one or zero) was added to Appendices P through V and X.

An Hourly Rolling Average (HRA) is the average value of the past sixty (60) most recent one minute average data points. The hazardous waste feed rate HRA does not indicate when the hazardous waste was shut off on a minute by minute time period. For example the instant the AWFCO block valve is closed there is no feed to the unit, however the HRA feed rate will continue to be >0 until an entire hour of no flow has passed.

Sixth, we respond to each of the numbered Areas of Violation, numbered 5-13:

5. A ST-HAF concern.  
The AWFCO block valve position (DI-107) in Appendix P shows the hazardous waste feed was shut off when the high range CO was greater than or equal to 101. The AWFCO block valve was closed and the hazardous waste feed was shut off all 5,691 times which were identified in this violation description.



6. A ST-HAF concern.

The AWFCO block valve position (DI-107) in Appendix Q shows the hazardous waste feed was shut off when the low range CO was greater than or equal to 101. The AWFCO block valve was closed and the hazardous waste feed was shut off all 667 times which were identified in this violation description.

7. A ST-HAF concern. On April 23, 2015 at 19:41:00, the data in Appendix R indicates the AWFCO positive shut off block valve (DI-107) was open one time while hazardous waste feed was flowing when the Particulate Matter (PM) scrubber blowdown was less than 195 lb/hr.

The process computer is programmed to pre-trip an AWFCO at a more conservative value than the corresponding BIF operating limit. An AWFCO automatically shuts off the hazardous waste feed block valve. The programmed pre-limit AWFCO value for PM scrubber blowdown is 200 lb/hr. The process computer compares the process parameter value to the pre-limit value once every second. The hazardous waste feed block valve will close the second the PM blowdown equals 200 lb/hr. An AWFCO closes the feed block valve as soon as the pre-limit value is reached, however because the position of the valve is recorded as a one minute snapshot, this immediate action may not be represented during the one minute period recorded in the data used for recordkeeping.

There are 59 seconds between each archived one minute data points where the data is not recorded. Within those 59 seconds, operating values continue to change. There is no set frequency or order when data from the process computer is transferred to the recordkeeping computer. The position of the feed block valve DI-107 can be saved early within the 59 second period whereas the value of the PM blowdown, that continues to change every second, may be saved later within the same 59 second period. The order in which these two operating parameters were saved within the 59 second window explains why it appears the feed block valve was still open when the PM blowdown was less than 195 lb/hr. The feed block valve position could be recorded early in the 59 second window when the valve was open. After the open valve position was saved, the computer closed the block valve closed when the blowdown equaled 200 lb/hr but the position of the closed block valve will not be recorded for this time period. The blowdown HRA continued to decrease until it equaled 193 lb/hr at which time it was saved to the data computer, still within the 59 second window. Although the way the process equipment operates means that the feed block valve was closed when the blowdown equaled 200 lb/hr, the recorded one minute data does show the valve as open with the blowdown slightly below 195 lb/hr.

The next minute of recorded data showed the block valve closed and the blowdown at 201 lb/hr, greater than 195 lb/hr.

8. A ST-HAF concern.  
The AWFCO block valve position (DI-107) in Appendix S shows the AWFCO block valve was closed during the 44 times identified by the EPA, therefore the hazardous waste feed was shut off during all 44 times identified in this violation description.
9. A ST-HAF concern.  
The AWFCO block valve position (DI-107) in Appendix T showed the AWFCO block valve was closed during the 45 times identified by the EPA, therefore the hazardous waste feed was shut off during all 45 times identified in this violation description.
10. A ST-HAF concern.  
The AWFCO block valve position (DI-107) in Appendix T shows the AWFCO block valve was closed during the 29 times identified by the EPA, therefore the hazardous waste feed was shut off during all 29 times identified in this violation description.
11. A ST-HAF concern.  
The AWFCO block valve position (DI-107) in Appendix T shows the AWFCO block valve was closed during the 6 times identified by the EPA, therefore the hazardous waste feed was shut off during all 6 times identified in this violation description.
12. A ST-HAF concern.  
The AWFCO block valve position (DI-107) in Appendix T shows the AWFCO block valve was closed during the 44 times identified by the EPA, therefore the hazardous waste feed was shut off during all 44 times identified in this violation description.
13. A ST-HAF concern. The corresponding data does NOT confirm that the high range CO HRA was greater than 101 ppmv. Dow recalculated the high range CO HRA using the one minute data that was given to the NEIC. These results are contained in Appendix T, See Tab High Range CO Column M. These calculations determined that the high range CO HRA was below 101 ppmv.  
  
The NOV evaluates AC-999 to calculate the HRA. AC-999 is already a HRA calculation; therefore the calculated results were much higher than they should have been or would have been if they were calculated properly. One minute average (OMA) values are required to calculate an HRA, but in the absence of OMA values, using one minute instantaneous values, AI-343, should give a value similar to the true HRA value.

Seventh, we respond to each of the lettered Areas of Concern.

- A. A ST-HAF concern. The NOV mischaracterizes the legal requirements this Area of Concern addresses.

First, the permit does not have any record keeping requirements of which we are aware. Please provide language and the section of the permit that contains the permit language to which the Area of Concern addressed.

Second, the Area of Concern's language does not address the applicable California regulation: 22 CCR §66266.102(e)(10) Recordkeeping, which says, "The owner or operator shall keep in the operating record of the facility all information and data required by this section until closure of the facility."

The recordkeeping requirements of 40 CFR § 266.102(e)(10) are accurately reflected in this Area of Concern, "The owner or operator must maintain in the operating record of the facility all information and data required by this section for five years."

Once the relevant legal requirements are understood, one can respond to this Area of Concern. EPA may be correct that it would be good for a facility with a five year retention requirement to keep records, "Records should be kept in current recordkeeping technologies (Microsoft Excel, Microsoft Access, etc.) to facilitate regulatory agency review, if there were only a five year requirement and if only EPA's review were considered. One needs to keep in mind that EPA is far from the only enforcement agency that may be reviewing records. The US Department of Justice/ FBI might well get involved in reviewing compliance to enforce matters for which they have primary federal enforcement jurisdiction. Each agency may have different software preferences. Any imposition of a requirement that has not been vetted in a formal regulatory issuance, would seem to need to collect all relevant potential federal, California and local enforcement agencies and reach a collective agreement as to what additional, non-regulatory requirements to impose.

One also notes, that Fortran was developed by the federal government in the Manhattan Project in the 1940s and is still in use today. Many computer programs have come and gone in the interim. An attempt to update the programming language would require a duplication of the existing system and may well yield something that becomes obsolete and unreadable while Fortran continues. One might compare this to the programming for the space shuttle, air traffic control and strategic defense programs which, once operational, are left in place and are not often updated even when an update has performance improvements, something not suggested here. There is no need to update these federal computer programs just so that each new set of employees is comfortable

with the programming language used.

One also notes that Microfische is one of the few data retention techniques that have actually stood the test of time and not just simulated time storage requirements.

One notes that the magnetic tape, 8 inch floppy disks (invented (IBM) in 1967), 5-1/4 inch floppy disks and 3 inch floppy disks, in addition to having never been tested for long term reliability, have all gone out of fashion and would require expensive, error prone, rewriting of the data that is required to be stored for the life of the facility. The oldest continuing operating facility in Pittsburg started operating in 1952. One notes that even the USB drive is at risk, with the new USB-C connection recently announced. At a point where Dow was looking to transfer some information, it cost \$500 per disk to commercially transfer information from a 5-1/4 inch disk to the then popular 3 inch floppy disk.

As noted in this Area of Concern, Dow meets all applicable legal requirements and the suggested change in permit is something that Dow expects it would oppose for the reasons stated above.

- B. A ST-HAF concern. The AWFCO block valve position (DI-107) in Appendix U shows the AWFCO block valve was closed during the 9,305 times identified by the EPA, therefore the hazardous waste feed was shut off during all 9,305 times identified in this concern.
- C. A ST-HAF concern. The AWFCO block valve position (DI-107) in Appendix V shows the AWFCO block valve was closed during the 28,086 times identified by the EPA, therefore the hazardous waste feed was shut off during all 28,086 times identified in this concern.
- D. A ST-HAF concern. When a feed stream block valve is closed, a value of zero is used to calculate total chloride feed rate HRA.

During the April 4 through 8, 2016 on-site inspection, records reviewed for the ST HAF indicated an event where the block valve on one process vent line was closed with the flowmeter indicating a small negative value. The negative value was used in the calculation to determine total chloride feed rate to the combustion chamber. In this case, the computer program did not use a value of zero when the block valve was closed. We know the chloride feed rate was zero because the block valve was closed. The program was modified on 5/26/2016 to set the flow value to zero when the block valve is closed.

- E. A ST-HAF concern. The process computer program will be reviewed and flow rates will be set to zero when the feed stream block valve is closed. Also, the computer program will be reviewed to evaluate negative values triggering the AWFCO system. This review and any needed changes are expected to be completed by 2/17/2017. Dow will update this letter every six (6) months until this action is complete.

Conclusion. Dow has completed our response to concerns identified in the NOV as 1-13 and A-D. We are progressing on our response to concerns identified in the NOV as E and expect to have this resolved by 2/17/2017.

If you have any questions regarding this response to your NOV, please contact me at 925-432-5214 or [CEcheverria@dow.com](mailto:CEcheverria@dow.com).

Sincerely,

Carlos Echeverria  
Responsible Care Leader

Attachment: EPA Process Description Corrections, Edited - Final Report - Dow Chemical VP1186, CBI Redacted Response, Updated Appendices P-V, Updated Appendix X.

cc: Rick Sakow, EPA, Region IX  
Maria Soria, California Department of Toxic substances Control  
Diana Peebler, California Department of Toxic Substances Control